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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,755	09/06/2000	Anders Eriksson	032559-071	9042

			EXAMINER
37825	7590	12/05/2005	CHANG, EDITH M

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ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/655,755	ERIKSSON, ANDERS
	Examiner	Art Unit	
	Edith M. Chang	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *19 September 2005*.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-22* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments/Remarks

1.   Applicant's arguments filed on September 19, 2005, have been fully considered but they are not persuasive.

Argument: Applicant argues that Examiner does not expressly show where each of Applicant's claim limitation is disclosed in Freed or Levien, nor does the Examiner show how those limitations are taught in the combination claimed by Applicant.

Response: In the Office action, the claims 1, 7, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freed ('683) in view of Levien ('264), the Office action states that the Freed discloses a sound synthesis system and its method based on the FIG.1 of the conventional system, FIG.3 of an overall block diagram of Freed's invention and FIG.4 of a simplified single channel of Freed's invention described in Brief Description of the Drawing in column 4, lines 15-30.

In FIG.4, block 191 control structure accepts user inputs, 181, 183 and 185 are composed in the means for deciding a discrete Fourier transform representation with zero-padded of a filter (column 2, lines 15-23 & column 7 lines 30-37) stated in the rejection of claims 1, 7, 13 and 17 in the Office action, wherein the blocks 181, 183 and 185 as *the means for determining* a discrete-frequency representation of a desired full length digital filter; the block 173 inverse transform is *the means* coupled to the means for determining *for transforming* the discrete-frequency representation into a

corresponding discrete-time representation; and a block 175 overlap-add coupled to the output of the means for transforming. However, Freed does not explicitly specify the details of the block overlap-add 175.

Levien teaches a filter invention in FIG.6 comprising a circular buffer 188 (*means for circularly shifting* the discrete-time representation) coupled to the Infinite Impulse Response IIR filter 182 (the means outputting a discrete-time representation) to store a segment samples and overlap samples (store a lengthy samples) and block 186 (means of a shortening window) coupled to the output of the circular buffer to output the segment.

Both Freed and Levien design/use filter to produce desirable and realistic sound signals, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the Freed's overlap-add block with Levien's teaching to employing infinite impulse response (IIR) filters to minimizing computational complexity (column 2 lines 15-21 '264) and having a real time processing (column 2 lines 9-12 '264).

The modified/combined Freed system with Levien's teaching discloses limitations as *cited in the claims*.

Argument: Applicant argues that the examiner has failed to establish a prima facie case of obviousness.

Response: Product and Apparatus claims, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. Where the claimed and prior art apparatus are identical or

substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established (MPEP 2112.01 [R-2]).

Freed's sound synthesis system discloses a substantially identical structure and process of designing a digital filter (FIG.4) comprising determining a transform domain filtering (a discrete-frequency representation of a filter), inverse transform the built spectrum to a time-discrete representation, and overlap-add to produce a sampling sequence represents the sound wave (column 2, lines 4-10 '683) from the zero-padded and oversampled sequence (column 2, lines 15-23 '683), except detailing the block of overlap-add. Hence, a prima facie case of obviousness has been established.

Argument: Applicant argues that Claim 1 is directed to the design of a digital filter, whereas Freed is directed to designing a signal.

Response: Freed's system takes the specification via block 191 (FIG.4) and designs the filtering/filter to produce the desired signal, hence, Freed is directed to the design of a filter. Besides, a signal is not statutory subject for patent, however, any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, is statutory subject t matter that may obtain a patent.

Argument: Applicant argues that Freed's overlap-add technique is used by frequency domain implementation of filtering operations (or signal generations), however, claim1 treats the problem of designing the filter used in this filtering operation, not the filtering operation itself.

Response: Freed's system is the designing the filter in FIG.4, wherein the overlap-add technique is used to generate the desired sound signal specified by user inputs via the filtering design (blocks 185 & 173). Therefore, Freed's invention is regarding designing a digital filter.

Argument: Applicant argues that claim 1 defines a procedure of obtaining a filter with the desired properties with respect to length of the filter and phase response, as described on page 9, line 28, to page 10, line 25.

Response: A positive limitation from the specification cannot be read into a claim that does not impose that limitation; hence, the limitations defined in the specification will not be read in the claims, if the limitations are not recited in the claims.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-4, 7-8, 10, 13-14, 17-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freed (US 5,686,683) in view of Levien (US 5,337,264).

Regarding **claims 1, 7, 10, 13, 17 & 20,** in FIG.1, FIG.3 and FIG.4, Freed teaches an inverse transform additive sound synthesis system and its method. In FIG.4, first, the interpolation 181, build spectrum 183, and transform domain filtering 185 (or TAB 2, blocks 10, 20 and 40 FIG. 1) decide a discrete Fourier transform representation with

zero-padded of a filter (column 2 lines 15-23 & column 7 lines 30-37), second, inverse

transform 173 (or IFFT 50 FIG. 1, column 2 lines 55-57) transforms the filtered

spectrum into a time-sampled representation (column 7 lines 41-45), third, overlap-add

175 is applied with the time-sampled representation.

Freed does not explicitly specify the details of the overlap-add, however Levien

teaches the overlap-add time reversal filter technique in FIG.4 & FIG 6. In FIG.6, a

circular buffer 188 (column 5 lines 19-23) supplies the segment samples 192 pulsing

overlap samples 194 (column 5 lines 8-10) to the shortened length IIR filter 184

(column 4 line 67-column 5 line 5 & lines 19-23). At the time of the invention, it would

have been obvious to a person of ordinary skill in the art to implement the Freed's

overlap-add block with Levien's teaching to employing infinite impulse response (IIR)

filters to minimizing computational complexity (column 2 lines 15-21) and having a real

time processing (column 2 lines 9-12).

The modified/combined Freed's system with Levien's teaching teaches third,

circularly shifting the time-sampled representation (segments), fourth, applying a

shortening window (IIR) to the time-sampled representation to produce a zero-padded

reduced output from the desired system (filter); and fifth, an input signal (sample 10

FIG.1, user inputs FIG.4 `683, 22 FIG.2 `264) convolves with the reduced length filter

in time domain (FIG.2 `264).

Regarding **claims 2, 8, 14 & 18,** the modified/combined Freed's system with

Levien's teaching teaches shifting the removing leading/tailing zeros (column 5 lines

35-36, lines 47-50).

Regarding **claim 3**, Freed teaches the noise suppressing spectral subtraction algorithm forming the discrete Fourier transform representation (output of block 40 FIG.1, output of 79 FIG.3 wherein the noise/broadband synthesis is detailed in FIG.5).

Regarding **claim 4**, Freed teaches the frequency selective non-linear algorithm for a realistic sound (human voice with echo cancellation, column 1 lines 17-24 & lines 45-49) wherein the frequencies are selected for the discrete frequency algorithm.

4.   Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freed (US 5,686,683) in view of Levien (US 5,337,264) as applied to claims 1 and 13 above, and further in vie of Leitch (US 5,202,900).

Regarding **claims 5 & 15**, Freed does not specify the shortening window being a Kaiser Window, however in FIG.2B Leitch teaches the Kaiser window (column 3 Enes 38-50). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Kaiser window taught by Leitch as the shortening window to avoid the excess splatter in the signal (column 3 lines 44-46 '900) in order to have a more actuated filtered/windowed signal.

5.   Claims 6, 9, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freed (US 5,686,683) in view of Levien (US 5,337,264) as applied to claims 1, 7, 13 and 17 above, and further in view of Craven (US 5,548,286).

Regarding **claims 6, 9, 16 & 19**, Freed does not specify further shiRing the

reduced length filter and the minimum phase filter, however Craven teaches the

minimum phase filter removing the leading zeros in an analogue and digital convertors

in FIG.1. In F1G.2 (C) the detail of block 30 comprise a minimum phase filter 34

(column 7 lines 21-28), one arrangement of the filter 34 is shown in FIG. 13 (column 5

lines 9-10) wherein the leading zeros in the filter response is cancelled by the filter

(column 17 lines 25-30). At the time of the invention, it would have been obvious to a

person of ordinary skill in the art to implement the Freed's A/D with Craven's teaching to

have a more accurate convertor (column 3 lines 45-46, 54-60 '286).

The modified/combined system further shihs the reduced length filter to remove

the leading zeros and transforms the reduced length filter further to a minimum phase

filter of an audio output (AUDIO FIG.1, '683).

6.   Claims 11, 12, 21 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Freed (US 5,686,683) in view of Levien (US 5,337,264) as applied to

claims 7 and 17 above, and further in view of Picchi et al (US 4,547,889).

Regarding **claims 11, 12 & 21, 22,** Freed does not specify the convolution in the

frequency domain by using an overlap-add method, however Picchi et al. teaches an

adaptive equalizer in the discrete frequency domain comprising a filter operating by the

overlap-save (or overlap-add) method (Abstract) in FIG.2 (column 6 lines 40-45),

wherein the overlap-saved time domain representation (output of block 14) is

transformed to discrete frequency domain by DFT 15 (column 2 lines 65-68). At the time

of the invention, it would have been obvious to a person of ordinary skill in the art have

the frequency transform taught by Picchi et al. in the modified/combined Freed's system

with Levien's teaching to receive/convolve the time domain representation in frequency

domain by using the overlap-add (or overlap-save) method for the purpose of not only

simplification but also of using the sample transforms for other subsequent

processing operations (decoding, synchronization etc (column 2 lines 28-34 '889).

Conclusion

7.　　**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

　　A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

8.　　Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Edith M. Chang whose telephone number is 571-272-

3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
November 28, 2005

KHAI TRAN
PRIMARY EXAMINER